REMARKS/ARGUMENTS

1.) Claim Amendments

The Applicants have amended claims 2, 55, 7, 12-15, 32, and 33. Claim 1 has been canceled herein and replaced with new claim 38. Claims 3, 4, 9-11, 16, 18-24, 30, and 31 were previously canceled. Accordingly, claims 2, 5-8, 12-15, 17, 25-29, and 32-38 are pending in the application. Favorable reconsideration of the application is respectfully requested in view of the foregoing amendments and the following remarks.

2.) Claim Rejections – 35 U.S.C. § 103(a)

In paragraph 1 of the Office Action, the Examiner rejected claims 1-2, 5-8, 12-15, 17, 25-29 and 32-37 under 35 U.S.C. § 103(a) as being unpatentable over Jarvinen, et al. (EP 0843301 A2) in view of Jansson (US 5,579,435) and Rao (US 6,101,466). The Applicants disagree that Jarvinen, Jansson and Rao show or suggest the claimed invention. The Examiner's comments in the *Response to Arguments* section of the Office Action indicate that the Examiner has not appreciated the novel aspects of the invention, but instead has focused on aspects of the invention that are not, in and of themselves, new. The Applicants have rewritten claim 1 in Jepson (improvement) format to focus the Examiner's attention on the novel aspects of the invention. The Examiner's consideration of the amended claims is respectfully requested.

In the Background section of the instant application, the Applicants state that it is known for basic comfort noise information to be generated in the encoder and transmitted to the decoder in the receiver. FIG. 1 shows how a conventional encoder produces estimated comfort noise parameters. These parameters are then transmitted over the communication channel to the decoder in SID frames. (Page 5, lines 8-12). FIG. 2 shows how a conventional decoder receives and decodes the comfort noise parameters. The problem is that the conventionally generated comfort noise is static. The static sound may be improved by increasing the update rate, but this decreases the discontinuous transmission (DTX) efficiency and consumes battery power at an unacceptable rate.

The primary reference, Jarvinen, produces extra comfort noise parameters (i.e., Random Excitation Spectral Control (RESC) parameters) ***in the encoder*** on the transmit side. (Page 4, lines 40-41). Jarvinen then transmits the RESC parameters, in addition to the basic comfort noise parameters, to the decoder in the SID frames. This has the disadvantage of using extra bandwidth on the communication channel.

According to the Applicants' claimed invention, conventionally generated comfort noise parameters are modified ***by the speech decoder*** based on properties of actual background noise. (Page 7, lines 7-9). The claimed invention does not need, and does not use, any extra transmit side information because the claimed *decoder* computes the extra (perturbing) parameters (spectral shape/gain) during the hangover period when a transition from speech to comfort noise occurs. Thus, the invention does not use extra bandwidth on the communication channel in the way that Jarvinen does.

The Examiner mistakenly seems to think that the Applicants are contending that the interpolating step is what is new about the invention. In the *Response to Arguments* on page 4 of the Office Action, the Examiner states, "The Examiner argues, as indicated in the rejection above, interpolation of the comfort noise parameters by the speech decoder is an obvious modification for providing smoother transitions in the generated comfort noise as the comfort noise is updated."

However, the Applicants are not contending that the interpolating step is new. In fact, the specification refers to "the conventional interpolated comfort noise parameters." (Page 10, lines 4-8). It is also not the object of the claimed invention to "provide smoother transitions in the generated comfort noise as the comfort noise is updated" as stated by the Examiner. Instead, the decoder in the claimed invention perturbs the comfort noise parameters received at the decoder in order to generate comfort noise that is more realistic and not too static. Thus, the steps that are new are the calculating and perturbing steps, which generate the more realistic comfort noise.

New claim 38 is a Jepson claim that replaces claim 1 and recites in the preamble that "the speech decoder receives speech information and a plurality of comfort noise parameter values from an encoder via a communication channel, and the decoder interpolates the plurality of comfort noise parameter values and generates comfort noise

from the interpolated comfort noise parameter values." The new part of the claim includes the steps:

> obtaining by the speech decoder, background noise parameter values from a receiver buffer, said background noise parameter values representing actual background noise;
>
> calculating, at the speech decoder, a mean value of the background noise parameter values over a period of time;
>
> calculating, at the speech decoder, variability information indicative of how the background noise parameter values vary relative to the calculated mean value of the background noise parameter values;
>
> in response to the variability information, perturbing the interpolated comfort noise parameter values by the speech decoder to produce perturbed comfort noise parameter values; and
>
> selecting by the speech decoder, at least some of the perturbed comfort noise parameter values for use in generating perturbed comfort noise.

The Applicants contend that this process, in which ***the speech decoder*** calculates variability information for the background noise and perturbs the interpolated comfort noise parameter values to produce perturbed comfort noise parameter values, is not taught or suggested by the cited references. Jarvinen, as noted above, produces extra comfort noise parameters (i.e., RESC parameters) ***in the encoder*** on the transmit side. (Page 4, lines 40-41). Jarvinen then transmits the RESC parameters, in addition to the basic comfort noise parameters, to the decoder in the SID frames.

The second reference, Jansson, discloses an antiswirling algorithm and improvements to it, but has nothing to do with the generation of comfort noise during discontinuous transmission (DTX). Instead, Jansson proposes a method of reducing the rapid variations in the signal spectrum during noisy times when no DTX is used.

The third reference, Rao, discloses the use of a weighted average of auto-correlation values of the input signal generated during the noise-analysis phase ***in the encoder***. The weighting function gives less weight to the auto-correlations during the first few frames since they may include speech, and more weight to frames toward the end of this phase. (Col. 3, lines 43-51). The purpose of Rao's method is to obtain a better estimation of the background noise parameters with the key idea being to more effectively suppress speech parts in the analysis. This process is not relevant to the claimed invention.

In a second process in Rao, a comfort noise generator gradually changes the nature of the signal from speech to pseudo-random noise in order to overcome the bursty nature of the comfort noise during the transition period from speech to comfort noise. The purpose is to create a more perceptually pleasant smooth transition from speech to comfort noise. This process modifies the excitation signal of the comfort noise generator and does not affect any comfort noise parameters themselves. Hence, Rao is very different from the claimed invention, which is used during the entire comfort noise period, and perturbs the spectral and/or energy parameter in order to generate perturbed comfort noise that is not too static. Thus, Jarvinen, Jansson, and Rao, taken alone or in combination, do not teach or suggest the claimed invention. Therefore, the allowance of claim 38 is respectfully requested.

Claims 2, 5-8, 12-15, 32 and 33 depend from new claim 38 and recite further limitations in combination with the novel and unobvious elements of claim 38. Therefore, the allowance of claims 2, 5-8, 12-15, 32 and 33 is respectfully requested.

Independent claim 17 has not been amended. Claim 17 expressly states that the claimed apparatus is ***in the speech decoder***, and recites components that perform the novel functions described above for claim 38. Thus, Jarvinen, Jansson, and Rao, taken alone or in combination, do not teach or suggest the claimed invention. Therefore, the allowance of claim 17 is respectfully requested.

Claims 25-29 and 34-37 depend from claim 17 and recite further limitations in combination with the novel and unobvious elements of claim 17. Therefore, the allowance of claims 25-29 and 34-37 is respectfully requested.

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CONCLUSION

In view of the foregoing remarks, the Applicants believe all of the claims currently pending in the Application to be in condition for allowance. The Applicants, therefore, respectfully request that the Examiner withdraw all rejections and issue a Notice of Allowance for claims 2, 5-8, 12-15, 17, 25-29, and 32-38.

The Applicants request a telephonic interview if the Examiner has any questions or requires any additional information that would further or expedite the prosecution of the Application.

Respectfully submitted,

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